

REMARKS

Claims 6, 7 and 20 have been amended and new claims 21 and 22 have been added. Claims 1-22 remain in the application. Reexamination and reconsideration of the application, as amended, are requested.

Claims 6, 7 and 20 were rejected under 35 U.S.C. 112, second paragraph as being indefinite. Claim 7 has been amended to overcome this rejection and new claims 21 and 22 have been added. Concerning claims 6 and 20, the claimed "60 to 90%" of the breakdown has been amended to --85 to 95%--. Support can be found on page 5, line 16 of the specification. Further the Applicant respectfully disagrees with the Examiner's objections.

As stated on page 5, lines 18 to 20, the breakdown in the first step within the tubular reactors is regarded as a rough breakdown. In contrast to this, the second step is regarded as a form of fine breakdown (page 5, lines 25 to 28). Further on page 6, lines 3-9, it is stated that the second hydrolysis step is used to conduct the hydrolysis to a present final value and so can be seen as "fine tuning" of the molecular weight. The mentioned passages of the specification make clear that the breakdown has to be seen relatively to the starting value and the desired end value. In contrast to the above, an absolute breakdown value of 100% would result in a complete breakdown and lead to pure glucose. Referring to the Examiner's concrete examples mentioned in the Office Action, in the one case the desired breakdown from a molecular weight (MS) of 10 million Daltons to a desired value of 500 kD. has to be seen as 100%, as well as the desired reduction from 1 million D. to the desired 500 kD.

Claims 1-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over SOMMERMEYER et al (U.S. 5,218,108) in combination with KOMAI et al (U.S. 3,446,664). This rejection is respectfully traversed. Applicant disagrees with the Examiner's opinion that KOMAI (U.S. 3,446,664) distinguishes between the treatment of a slurry and a solution.

The Examiner interprets the “homogeneous phase” mentioned in column 3, lines 68 to 72 as solution. Applicant disagrees. In the context of the mentioned passage, the heating of the slurry at 145 to 155 °C by the use of a heat exchanger is explained. At column 3, lines 68 to column 4, line 2, then it is stated that the heat exchanger requires a turbulent flow for rapid heating of the liquid into a homogeneous phase and that the occurrence of a heterogeneous phase has to be prevented within the reaction tubes. Here the meaning of a “homogeneous” and a “heterogeneous” phase are defined in respect of viscosity and density (see column 3, line 75 to column 4, line 1.). The dissolution of any solid particles is not mentioned. The same applies to all other parts of the specification. In contrast in column 4, line 64, the expression “starch slurry” is used instead of “starch solution” to describe the reacting liquid.

The claimed invention is related to the breakdown of starch to a well defined end-product. In contrast to the saccharification of the starch as claimed by KOMAI, for the use as plasma expanders the low molecular weight molecules cause side effects and have to be removed from the end-product as can be seen from Example 1. Here after the breakdown to an average molecular weight to 250,000 Daltons the molecules with a molecular weight of less than 50,000 Daltons are removed to make the product suitable as plasma diluent (page 14, lines 16 to 23).

To achieve a controlled process as disclosed in the present invention, the use of a starch solution is inevitable. The breakdown of a starch of 1,4000,000 Daltons so a product of 250,000 Daltons as mentioned in Example 1 corresponds to a degree of hydrolysis of about 0.05%, which is a completely different problem to the 48% of hydrolysis as for example indicated by KOMAI in Figure 5. To achieve a homogeneous hydrolysis at such low degrees of hydrolysis a complete dissolution of the starch applied is absolutely necessary.

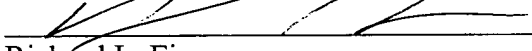
Therefore it is Applicant's position that KOMAI teaches away from the present invention. Consequently, the present invention cannot be seen as obvious in the light of KOMAI and in combination with SOMMERMEYER.

In view of the above, it is believed that all remaining claims are now in condition for allowance and such favorable action is earnestly solicited.

Respectfully submitted,

Klaus SOMMERMEYER et al

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By: 
Richard L. Fix
Reg. No. 28,297

STURM & FIX LLP
206 Sixth Avenue, Suite 1213
Des Moines, Iowa 50309-4076
Telephone: (515) 288-9589
Facsimile: (515) 288-5311